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10/614,257	07/03/2003	Pauline Shuen	112025-0524	5996

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EXAMINER	
SOL, ANTHONY M	

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2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,257	SHUEN ET AL.	
	Examiner	Art Unit	
	Anthony Sol	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 15-18 are objected to because of the following informalities:

Listing of claims skips claim 14. The Examiner has renumbered claims 15-18 to claims 14-17, respectively. The Applicant is advised to review this Office action accordingly.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1- 4, and 7-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Pub. No. US 2002/0046271 A1 ("Huang").

Regarding claim 1,

Huang shows in fig. 8, executing the STP at each intermediate network device 802, 804, 806 of the stack 800 so as to assign the stack port of each device 810, 822, 832 to either a Root Port Role or a Designated Port Role (para. 95, lines 8-9, ***select the root port and the designated ports***), and to assign a non-stack port 840 at single device 806 of the stack 800 to the Root Port Role (para. 62, lines 14-16, ***standard STP determines the root port based upon the receiving port ID and the corresponding***

path costs)(see paras. 105-108 to see steps involved in topology change as the events are propagated toward a root across stack 800).

Huang further discloses transitioning the ports assigned to the Root Port Role and the Designated Port Role to a forwarding STP state (para. 61, *When the topology of the stack changes, stack ports may change from the blocking state to the forwarding* state). Note that a stack port consists of a root port and designated ports as is disclosed above in the previous paragraph.

Huang still further discloses designating all non-stack ports (para. 117, line 6, *non-stack ports*) at the devices of the stack 800 that provide connectivity to the root (para. 106, line 8, *external switch*), other than the non-stack port 840 assigned to the Root Port Role, as Alternate Stack Root Ports (para. 117, lines 5-6, *GVRP configuration will only enable/**disable** GVRP on non-stack ports*).

Huang still further discloses transitioning the Alternate Stack Root Ports to a discarding STP state (para. 117, lines 5-6, *GVRP configuration will only enable/**disable** GVRP on non-stack ports*) and in response to a failure at the non-stack port assigned to the Root Port Role, transitioning a selected one of the Alternate Stack Root Ports from the discarding STP state directly to the forwarding STP state (para. 59, *Having an elected master operational at all times **eliminates a single-point-of-failure problem** in conventional stack configurations. The SNMP agent 118 can always communicate with a stack master*; para. 63, *When the master is down, the slaves continue running with the old master bridge ID until a new master is **selected***; para. 107, *a nonstack port*

*makes an STP **state transition***).

4. Regarding claims 2 and 3,

Huang discloses that each switch independently builds a minimal cost spanning tree using a minimal cost spanning tree algorithm, and elects a master switch based upon the topology map (para. 60). Huang further discloses that when two BPDUs with the same root bridge ID, root path cost, and originator ID are received, standard STP determines the root port based upon the receiving port ID and the corresponding path costs (para. 62).

5. Regarding claim 4,

Huang discloses when a switch receives a proprietary TCN packet from a stack port in the forwarding state, it sends back a proprietary Topology Change Acknowledgment (TCA) packet (para. 99).

6. Regarding claim 7,

Huang discloses designating a port cost of zero to assign root port and designated port (para. 68-90).

7. Regarding claim 8,

Huang shows in fig. 8, stack 800 consisting of three stack switches 802, 804, and 806 (para. 105).

8. Regarding claims 9, 11, and 12,

Huang discloses Hello Protocol module 100 that periodically sends "hello" packets through its configured stack ports to establish "adjacency" with other switches in the same stack (para. 46).

9. Regarding claim 10,

Huang shows in fig. 8, a plurality of ports of interfaces 810, 832 for connecting a device 806 to a network entity such as one connected coupled to port 840.

Huang further shows in fig. 8 at least one stack port of interface 832 for connecting the device 806 to one or more other intermediate network devices 802, 804 that cooperate to form a stack 800.

Huang discloses a port role selection state machine, Topology Discovery/**Master Election protocol 102**, configured to assign roles to the ports (para. 64, *The STP states of the stack ports are determined by the Topology Discovery protocol 102*)).

Huang discloses a port transition state machine, Topology Discovery protocol 102, configured to transition the ports among a plurality of spanning tree protocol (STP) states depending on the assigned roles (para. 64, *The STP states of the stack ports are determined by the Topology Discovery protocol 102*).

Huang further discloses a port role selection state machine, Master Election protocol 102, is configured and arranged to assign the stack port to one of a Root Port Role/Master role or a Designated Port Role/Slave role (para. 52, *According to a first*

rule, if there exists an L3-capable switching node in the topology map, elect the L3-capable switching node with the smallest switch ID as the master... Otherwise, it takes a slave role). Note that the determination of the master/slave role also determines the Root Port Role or Designated Port Role.

Huang still further discloses that the port transition state machine is configured and arranged to transition those ports that are assigned to the Root Port Role or to the Designated Port Role to a forwarding spanning tree port state (para. 61, *A stack port is in the forwarding state if it is one of the end points of a tree branch link...When the topology of the stack changes, stack ports may change from the blocking state to the forwarding state*).

10. Regarding claim 13,

Huang discloses that the STP module determine the STP states of the non-stack ports (para. 64).

Huang discloses when a switch receives a proprietary TCN/BPDU packet from a stack port in the forwarding state, it sends back a proprietary Topology Change Acknowledgment (TCA) packet (para. 99).

11. Regarding claim 14,

Huang discloses executing the STP so as to assign the stack port to a Root Port

Role (para. 52, *Election of the master is accomplished in accordance with the Master Election protocol 102)*. Note that the determination of the master/slave role also determines the Root Port Role.

Huang further discloses transitioning the stack port, which has been assigned to the Root Port Role, to a forwarding STP state (para. 61, *A stack port is in the forwarding state if it is one of the end points of a tree branch link...When the topology of the stack changes, stack ports may change from the blocking state to the forwarding state*).

Huang still further discloses designating all non-stack ports that provide connectivity to the root as Alternate Stack Root Ports (para. 54, *if no switch declares to be the master*). Note that determination of the master/slave role also determines the type of port designations such as Stack Root Port or Alternate Stack Root Ports.

Huang still further discloses transitioning the Alternate Stack Root Ports to a discarding STP state (para. 61, *The STP running at a switching node determines the STP states of its own nonstack ports... link up/down events... a transition between a master role and a slave role*).

Huang still further discloses that in response to receiving from a source intermediate network device a proposal Bridge Protocol Data Unit (BPDU) message on the stack port that specifies a path cost to the root and that seeks to transition a port of the source device to a forwarding state, issuing one or more Rapid Transition Acknowledgment messages to the source device, provided that the specified path cost of the proposal BPDU is lower than the root path costs associated with the Alternate Stack Root Ports (para. 62, *When a BPDU is received, it forwards the BPDU*

unchanged to all stack ports... standard STP determines the root port based upon the receiving port ID and the corresponding path costs; para. 96, *the STP module in turn calls topology_change_detection to initiate a topology change event, and send a BPDU packet from the receiving port, with a topology change acknowledgment flag set to one, to acknowledge receiving the TCN packet)*

Huang still further discloses that the one or more Rapid Transition Acknowledgment messages signal the intermediate network device's agreement to the port of the source device transitioning to the forwarding state (para. 100, *determines the topology change flag in the forged BPDU, and passes it to the STP module 106 with the forged BPDU that has the TCA flag set to one).* Note TCA is the acknowledgment message.

12. Regarding claim 15,

Huang discloses that the SSI module 104 receives a TCA packet from a stack port and determines the receiving port's designated root path cost among other designations and determines the topology change status in the switch (para. 100).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 5, 6, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Huang in view of Admitted Prior Art ("APA").

Regarding claims 5 and 16,

Huang does not disclose transitioning the given Alternate Stack Root Port of the source device from the discarding STP state directly to the forwarding STP state if it receives a Rapid Transition Acknowledgement message from each other member of the stack.

The Applicant's APA discloses a topology change acknowledgment (ACK) flag 142 and that the handshake utilized by adjacent bridges allows for rapidly transitioning designated ports to the forwarding states.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the architecture for creating a single image for a stack of switches of Huang to use the IEEE Std. 801.w standard including the ACK flag 142 as taught by the APA. One skilled in the art would have been motivated to make the combination in order to comply with the well-known IEEE standard and to minimize network outage.

14. Regarding claim 6,

Huang does not explicitly disclose that the spanning tree protocol is one of the IEEE Std 802.1w.1w-2001 and the IEEE Std.802.1s-2002 specification standards.

The Applicant's APA discloses IEEE Std. 801w standard (Applicant's Specification, p. 3, lines 25-27).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the architecture for creating a single image for a stack of switches of Huang to use the IEEE Std. 801.w standard as taught by the APA. One skilled in the art would have been motivated to make the combination in order to comply with the well-known IEEE standard.

15. Regarding claim 17,

Huang discloses that the standard GVRP protocol is running independently at each switching node, and results in each switching node independently determining its own VLAN domain for each VLAN (para. 117).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Shabtay (US6724734B1) teaches creating spanning tree of a network including clusters.
- Sugihara (US6785272B1) teaches intelligent stacked switching system.
- Adelman (US6006259) teaches Internet protocol network clustering system.

- Ding (US6981034B2) teaches decentralized management architecture for a modular communication system.
- Melvin (US5802333) teaches network inter-product stacking mechanism in which stacked products appear to the network as a single device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMS

5/3/2007

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